Fisheries Resource Monitoring Program, 2000-2001 Cook Inlet/Gulf of Alaska Region

Fall Performance Report to the Regional Advisory Councils and Federal Subsistence Board

Federal Subsistence Management Program
October 1, 2001

Background

On October 1, 1999, the Secretaries of the Interior and Agriculture expanded Federal subsistence fisheries management in Alaska under Title VIII of ANILCA. To meet this management responsibility, the Federal Subsistence Board established the Fisheries Resource Monitoring Program to gather information on fish stock status and trends, subsistence harvest patterns, and traditional ecological knowledge. Improving the range of available information is crucial to effective fisheries management both to protect fishery resources and to ensure the subsistence priority.

The Fisheries Resource Monitoring Program funds studies to gather, analyze, and report information needed to manage and conserve subsistence fishery resources, address fisheries issues and priorities identified by the Regional Advisory Councils, minimize fishery conflicts, and address regulatory actions before the Board. The Board has adopted a unified approach where Federal agencies work together with State, Tribal and local organizations. The Monitoring Program is multi-disciplinary, blending together the biological and social sciences with traditional ecological knowledge to manage and conserve fishery resources and ensure priority is given to subsistence users on Federal Conservation Units in Alaska.

The Fisheries Resource Monitoring Program was initiated in FY2000 (Figure 1). Projects totaling approximately $2 million were initiated during the 2000 season, with funding commitments of up to 3 years (FY2002). In FY2001, a larger program was funded. Projects totaling approximately $7.25 million were initiated during the 2001 season, with funding commitments of up to 3 years (FY2003).

Technical oversight and administration of these projects is provided by the Fisheries Information Services (FIS), Office of Subsistence Management. FIS staff provide technical assistance during both the planning stage when Investigation Plans were drafted; and then while the projects are actually being implemented. In many cases, site visits were conducted and recommendations made to alter project implementation. The Investigator for each of these projects is required to provide periodic interim reports of progress, as well as a final report of results. Most recently, all Investigators were required to provide a progress report by September 1, 2001.

The Resource Monitoring Program in Cook Inlet/Gulf of Alaska

A total of 11 projects have been implemented in the Cook Inlet/Gulf of Alaska (CIGA) region (Table 1). These projects are a mixture of Stock Status and Trends (SST) and Harvest Monitoring or Traditional Ecological Knowledge (HM/TEK) projects. In some cases, project implementation was altered from the original plans.

Most of the Resource Monitoring Program in the CIGA region has been directed at Copper River Salmon, the primary issue and information need for this region. Some projects also address Copper River steelhead, Prince William Sound salmon, and Cook Inlet Dolly Varden and eulachon.

Following are summaries that address progress and results for projects within each of these location/species categories. Following those summaries are the actual progress reports for each project that were submitted by the Investigators.

Copper River Salmon:

A weir was constructed in Tanada Creek to assess sockeye escapement into the system at question for the Batzulnetas subsistence fishery (00-013). During 2000, a conventional picket weir was installed; however, it failed during high water. In 2001, a floating weir was successfully utilized. In comparison to historic records, escapement was poor into Tanada Creek in 2001. The third and final year of funding commitment will occur in 2002. Continuation of this work should be considered, including estimation of an escapement goal.

Most of the SST work is directed at assessment of sockeye and chinook in the mainstem Copper River:

> Regarding sockeye; funding has been dedicated for capital construction to improve the ADF&G sonar site at Miles Lake (00-034). This work was not completed in 2000 due to high water; however, a contract has been awarded for construction during fall, 2001. The cost of this construction is higher than originally budgeted, however, ADF&G has provided the additional funds. Sonar was first tested in 2001 as an inriver "test fishery" to gauge early season salmon abundance in the Copper River shortly above the commercial fishery (00-021). This is very difficult work and should be viewed as a research and development effort. All project objectives were met during 2001, and this project is scheduled for a second year in 2002.
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> Regarding chinook, work was completed in 2001 to determine the feasibility of utilizing fishwheels to capture chinook in Baird Canyon in the lower Copper River (00-020). The objective of this project is to capture and tag chinook in the lower Copper River, and then conduct a recapture site with fishwheels further upriver and estimate chinook abundance through a mark-recapture experiment. The 2001 feasibility work was very successful, including construction and deployment of two very large fishwheels. It appears that enough chinook (approximately 900, likely about 3% of the inriver return) were captured to provide an adequate mark to credibly estimate inriver abundance. If successful, this project will provide arguably the most significant piece of new information for salmon management in the Copper River. It should also be noted that if successful, this project provides a unique platform from which to conduct other important assessment work. The Baird Canyon fishwheels will again be deployed in 2002, as well as two new fishwheels at an upriver site. It appears that actual costs for this project may be more than originally budgeted. A supplemental funding request is under consideration.

Two HM/TEK projects were funded to address Copper River salmon:

> All planned data collection was completed to characterize the subsistence salmon fisheries in the Glennallen and Chitina areas, including TEK of Ahtna elders (00-040). Some additional

interviews to complete this work are planned for the upcoming year. The Investigator will make a presentation of results to the Regional Council.

Only one project was unable to be initiated as planned in 2001. Funding was dedicated to hold a series of workshops to address Copper River salmon issues (01-217). This work was scheduled for early spring, 2001; however, the lateness of completing the FY2001 selection process (late February) left insufficient time for the Fish and Wildlife Service to secure a Cooperative Agreement to initiate this project. This work has been rescheduled for 2002.

Copper River Steelhead:

Steelhead represent only a very small portion of the subsistence harvest. However because the Copper River contains relatively few steelhead, which is the northern-most population of this species, some work was funded to ensure their sustainability.

Two projects were funded to address Copper River steelhead:

Work to estimate abundance of the two largest known spawning populations of steelhead was initiated in 2001. A weir was installed near the outlet of Dickey Lake in the Middle Fork of the Gulkana River in spring 2001; however, the project design was successfully altered to a mark-recapture study. The final estimate of abundance is not complete; however, spawning abundance appears no more than several hundred fish. Work is currently underway to estimate spawning abundance in the Hanagita River.

Work to estimate subsistence steelhead harvest in the new, early season (late May) fishwheel fishery in the Glennallen subdistrict was initiated in 2001. Catches at two fishwheels were monitored. Additionally, aerial surveys were conducted to count fishwheel effort during the late May fishery. In 2002, two additional fishwheels will be monitored.

In combination with ongoing harvest estimates from the remainder of the subsistence fishery, these programs are designed to provide maximal estimates of exploitation. Unless exploitation appears excessive, all steelhead work should be conclusive after the final year of funding commitment in FY2003.

Prince William Sound Salmon:

The existing ADF&G conventional picket weir for sockeye was extended through September to count coho passage into Coghill Lake (00-035). During 2001, two flood events were experienced during August that required the weir crew to pull pickets until the water level subsided. It is likely that significant coho passage occurred during these high water events, rendering the coho escapement estimate into Coghill Lake a minimal estimate of questionable value. This project is scheduled for continuation and final year of funding commitment in 2002. However prior to proceeding, the Investigators need to alter the study design and address how to obtain an

unbiased estimate of escapement in the high likelihood of more flood events. Even if continued next year, this work should be conclusive after the final year of funding commitment in FY2002.

Cook Inlet:

Two projects were funded to address small stocks of fish on the Kenai Peninsula:

A weir was installed in Cooper Creek (tributary to the Kenai River near Cooper Landing) to estimate Dolly Varden seasonable abundance. The hydrology of Cooper Creek was significantly altered from historic levels as a result of the dam on Cooper Lake and is much lower and colder than pre-dam conditions. The project was successfully completed and abundance of Dolly Varden is very low. This project is scheduled for completion in 2002 and should be conclusive after the final year of funding commitment in FY2002.

Work to assess eulachon in Turnagain Arm was conducted in 2001 (00-041). Eulachon biology is not well understood and assessment must be considered as research and development. A wide range of project objectives were successfully completed including estimation of run timing, mapping of spawning distribution, and development of a juvenile sampling program to measure spawning success. The 2001 study design was significantly altered from the original plan in 2000, which required utilization of the entire budget including that planned for 2002 work. It is not likely that the Fisheries Resource Monitoring Program will have funds for additional work in 2002.

The status of information needs for subsistence fishery management in Cook Inlet has been fluid as evidenced by the recent repeal of rural designation for much of the Kenai Peninsula. Funding of new work in Cook Inlet should focus on determining subsistence needs for fish stocks on Federal public lands.

Summary

In total, the vast majority of the Fisheries Resource Monitoring Program was successfully fielded in this region as planned. In most cases, project results have met expectations. Most efforts have been collaborative between agencies and organizations. Significant efforts have been realized to build capacity in rural organizations associated with the Copper River, particularly NVE and CRNA.

Most of the FY2000 and FY2001 projects have funding commitments in FY2002 (Table 1) and will continue as planned. For a few projects, important questions of study design should be resolved prior to proceeding.

A selection process has been underway for new projects in FY2002 and a draft Resource Monitoring Plan will be presented to the Regional Council for review. At question for FY2002 is whether to continue to invest almost solely in assessment of Copper River salmon, particularly chinook, or also examine smaller salmon stocks and issues elsewhere in the region.

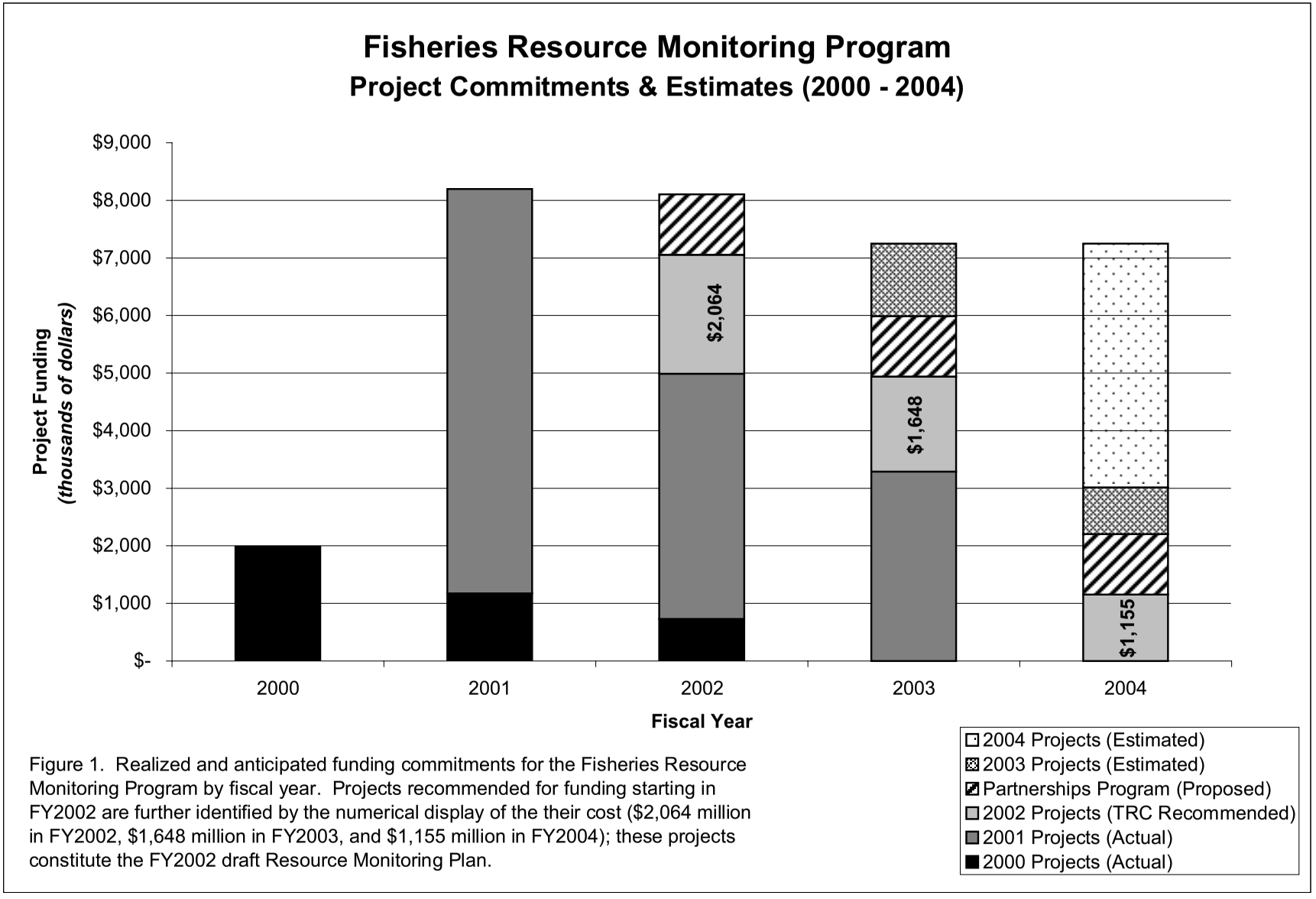


Figure 1. Realized and anticipated funding commitments for the Fisheries Resource Monitoring Program by fiscal year. Projects recommended for funding starting in FY2002 are further identified by the numerical display of the their cost ($2,064 million in FY2002, $1,648 million in FY2003, and $1,155 million in FY2004); these projects constitute the FY2002 draft Resource Monitoring Plan.

Table 1. Summary of Subsistence Fisheries Resource Monitoring Program in Cook Inlet/Gulf of Alaska, FY2000 - 2001

FIS #	Data Type	Project Title	Investigators	Budget FY2000	FY2001	FY2002	FY2003
		Copper River Salmon					
00-013	SST	Abundance and Run Timing of Adult Salmon in Tanada Creek	NPS	$50.0	$44.5	$43.5	
00-034	SST	Miles Lake Sonar Improvement	USFS, ADFG		$58.5		
01-020	SST	Feasibility of Monitoring Chinook Escapement in Copper R	NVE,LGL		$282.9	$219.8	$199.9
01-021	SST	Develop Inseason Abundance Estimate in lower Copper R	NVE,LGL		$157.9	$149.5	$142.4
00-040	HM/TEK	Copper River Subsistence Salmon Fishery Evaluation	ADFG,CRNA	$108.0			
01-217	HM/TEK	Workshop to Build Capacity among Copper R Groups	CRNA, LGL			$35.9	
		Subtotal		$158.0	$543.8	$448.7	$342.3
		Copper River Steelhead					
01-148	SST	Stock Status of Copper River Steelhead	ADFG, CRNA		$168.2	$129.2	$50.5
01-035	HM/TEK	Copper River Steelhead Harvest Monitoring	NPS, CRNA		$9.1	$9.1	$9.1
		Subtotal		$0.0	$177.3	$138.3	$59.6
		Prince William Sound					
00-035	SST	Extend Coghill Lake Escapement Weir Operations	ADFG, USFS	$30.0	$30.0	$30.0	
		Cook Inlet					
00-038	SST	Extend Cooper Creek Weir	ADFG	$27.0	$27.0	$27.0	
00-041	HM/TEK	Eulachon Subsistence Use	USFS	$59.9	$87.1		
		Subtotal		$86.9	$114.1	$27.0	$0.0
		Grand Totals		$274.9	$865.2	$644.0	$401.9

Progress Reports
for
Copper River Salmon

00-013	**Abundance and Run Timing of Adult Salmon in Tanada Creek**
00-034	**Miles Lake Sonar Improvement**
01-020	**Estimating Chinook Salmon Escapement to the Copper River Using Fishwheels and Mark-recapture Experiments**
01-021	**Develop Methods to Estimate Inseason Salmon Abundance in the Lower Copper River**
00-040	**Copper River Subsistence Salmon Fishery Evaluation 2000 And Traditional Fisheries Knowledge Project**
01-217	**Workshop Series to Build Capacity for Collaborative Fisheries Co-management Among Copper River Native Groups**

00-013 Abundance and Run Timing of Adult Salmon in Tanada Creek, Wrangell - St. Elias National Park and Preserve, Alaska

Investigator(s) Information: Eric R. Veach, National Park Service, Mile 105.5 Old Richardson Hwy., Copper Center, Alaska 99573

Summary

We operated a floating weir in Tanada Creek from June 5 to August 22, 2001. Between 7/25 and 8/2 the weir was submerged by flood flows and was not operable. Based on preliminary data summary, less than 1700 sockeye salmon and less than 20 chinook salmon were observed passing through the weir. These results suggest that the sockeye run was among the lowest 10 percent of runs since 1962. We collected data on flow levels and stream temperatures. We also installed a video counting system using 2 video cameras. We are still testing this system, but we believe it will be an effective tool for enumerating migrating salmon in Tanada Creek in 2002. We plan to collect otoliths from sockeye salmon carcasses in Tanada Lake in mid-September.

The project utilized all of the unexpended $14,400 of funds from FY 00 and the $44,500 of funding provided in FY 01. The project should have received $46,450 of FY 01 funds, however, the difference of $1950 will be added to the FY 02 funding. The project went over budget by $7000 and this difference was covered through the use of Park base funding.

00-034 Miles Lake Sonar Improvements

Investigator(s) Information: J. Johnson, Alaska Dept. Fish and Game, Phone: 907-424-3212, e-mail: Jay_Johnson@fishgame.state.ak.us

Study Objectives and Results
Originally construction of the replacement artificial sonar substrate was to take place in 2000, but water conditions in the Copper River did not allow construction to occur. Construction is now expected to begin September 17, 2001.

Methods
The Department of Fish and Game advertised for a construction design that would include working in the flowing waters of the Copper River. Although the work was advertised Statewide, no companies bid on the project. The department abandoned plans to work in the flowing waters of the Copper River and a new invitation to bid for preparation of construction plans was prepared and advertised Statewide. The successful bidder prepared plans accordingly. From the prepared plans, construction was advertised locally and Statewide and two local companies bid on the project. The contract was awarded on September 7, 2001. The State of Alaska has a mandatory 10-day period in the event any challenges to the awarded bid are made. Barring any unforeseen challenges, construction is expected to begin September 17, 2001.

Schedule
Construction was to take place in September of 2000, but the water level of the Copper River was too high to allow construction to proceed. Construction is now expected to begin September 17, 2001.

Staffing
No staffing problems are anticipated. Originally funds to cover staff salaries for on-site oversight during construction was to come from the subsistence funding. Roger Dunbar, PWS Fishery Biologist will monitor construction daily and provide weekly reports. Due to the anticipated budgetary shortfall, the department will now cover staff salaries. Subsistence funds intended for staff salaries will be used to cover construction costs.

Budget
The engineer's original June 2000 estimate of construction costs was approximately $60-65,000. The ADF&G conducted bathymetry work in the Copper River in August and October, 2000, and found that an alternate site would be a better location to ensonify and count fish in the Copper River. Since the construction site was different, the State Procurement Office stipulated that new construction plans be drawn up. An engineer visited the site this summer and prepared new plans. His construction estimate was approximately $150,000. In addition to funding from the Subsistence Board, ADF&G has secured Capital Improvement Project (CIP) funds for construction and new hydroacoustic equipment. Total CIP funding was expected to be $250,000; however, those funds were tied to revenues from the Commercial Fisheries Entry Commission and revenues for 2001 were less than anticipated. As a result, the department's appropriation is likely to be approximately $150,000, of which $50,000 has been expended for engineering and equipment. Combined with the Subsistence Board funds, the department has approximately $175,000 available to fund construction.

The department has received bids from local contractors for construction of the new artificial substrate in excess of $210,000. The department will have to cover the estimated $50,000 shortfall internally, unless another funding source can be identified.

01-020 Estimating Chinook Salmon Escapement to the Copper River Using Fishwheels and Mark-recapture Experiments

Investigator(s) Information: Robert Henrichs, Native Village of Eyak (NVE), Phone: 907-424-7738, Michael Link, LGL Alaska Research Associates, Inc., Phone: 250-656-0127, Brian Bue, ADF&G Comm. Fish. Div., Phone: 907-267-2123, Dave Bernard, ADF&G Sport Fish Div., Phone: 907-267-2380.

Objectives for Year 1 and Results to Date

Objectives

Evaluate the efficacy of installing and operating fishwheels in Baird Canyon.
Estimate the fishwheel capture efficiency on chinook salmon.
Compare capture efficiencies among sites.

Two large aluminum live-capture fishwheels were assembled near Chitina and floated downstream and installed in Baird Canyon in May 2001. One fishwheel operated on the river's right bank from 29 May to 7 June and the other fishwheel was operated on the river's left bank from 5 June to 11 July. Preliminary data indicate that nearly 900 chinook salmon and 23,000 sockeye salmon were captured in the fishwheels during the 2001 field season (Table 1 and Figure 1). River levels in late May were some of the lowest in 3 decades and this hampered the downstream float and fishwheel deployment. The first fishwheel (on the right bank) was operated in what appears to be an excellent low-water site but it stopped turning when the river rose to more typical June levels (and eddy formed in the area). We shifted attention to getting the second fishwheel operating on the river's left bank while the river continued to rise. Once the second fishwheel was operating and catching lots of fish, the water velocity in the canyon made repositioning the first fishwheel upstream very difficult. In addition, the large catches in the second fishwheel required that the crew spend a significant portion of each day handling and releasing fish. These factors made it difficult to move the first fishwheel to better sites upstream of the narrowest part of Baird canyon. The second fishwheel site was excellent and exceeded our expectations with its apparent catch rates.

We are awaiting the release of ADF&G's chinook escapement estimate to prepare our estimate of the fishwheel capture efficiency on chinook salmon in 2001. However, an educated guess of the catch rates on chinook suggests 2.5 to 3.5 percent of the chinook salmon passing the site in 2001 were captured in the fishwheels (our goal was 3 to 5 percent from two fishwheels). Given that we essentially fished one of two fishwheels (the first fishwheel was idle through much of the run) and this was the first year of operation (we have learned much about logistics and deployment that will improve future catch rates), it appears that fishwheels will work well in the future to capture chinook salmon in the Baird Canyon area.

Over 300 of the chinook salmon captured in the second fishwheel in 2001 were marked with an opercular hole punch, allowing us to get an idea of the repeat capture rate of these fish and a rough estimate of the mark rate from ADF&G recovery effort upstream. We decided not to apply individually numbered tags to fish in 2001 in order to focus our effort on maintaining the fishwheel and trying to move the second fishwheel. This decision was reviewed in-season by OSM's Dr. Steve Klein and others and they supported the choice to not apply tags at the expense of time spent operating and moving the fishwheels.

NVE participated in all aspects of the study including project mobilization, in-season field sampling, and demobilization. NVE biologists will also help with project reporting this fall. Five Cordova residents worked as technicians on the project during the 2001 field season, two of which were Tribal members. These technicians assisted in numerous aspects of the project that were critical for long-term project development. These aspects include wheel construction and transport, wheel operation and maintenance, fish capture, handling, and marking, data recording, and wheel demobilization.

The project was an enormous success – we managed to get fishwheels to capture a good number of chinook salmon and NVE was able to get heavily involved with salmon stock assessment on the Copper River.

Consultations and Capacity Development

Consultations

a) ADF&G, Div. of Sportfish – continuously throughout the project (e.g., discussion of chinook catch rates in upriver sampling). Contact is Matt Evenson.
b) ADF&G, Div. of Comm. Fish – both before and after the field season. Contacts are Dan Sharp and Steve Moffit.
c) USFWS, Office of Subsistence Management – Consultations during the before and during field season. Contact is Doug McBride.

A presentation was made to interested public and Cordova District Fishermen United (CDFU) members and executive in early May on both this project and the lower river test fishery project that NVE was doing. OSM technical representative Doug McBride and National Park Service representative Eric Veach also toured the field site. Lawrence Stephens (Nisga'a fisheries technician from Northern British Columbia) provided technical assistance and training to field staff during almost four weeks on site.

Capacity Building

NVE was integral in essentially all aspects of the field study providing field technicians and administrative and logistical support for the project. NVE worked with LGL personnel to regularly review in-season progress toward study objectives and participated in decisions to modify field effort to meet challenges encountered during the field season.

NVE and ADF&G submitted joint research proposals to OSM for 2002 after seeing the initial catches of chinook during the 2001 season.

Methods

Given the logistical challenges of this project and its untried nature we expected to encounter some problems. However, all problems were overcome during the season. Most problems were logistical in nature – we had an enormous number of tasks to complete in difficult terrain and conditions. The most significant logistical problems were associated with boats. We underestimated and underbudgeted the vessel support requirements for this project. Unlike a State or Federal fisheries agency, NVE has limited outside resources for capital purchases of additional boats and outboard motors. This shortage of funding was somewhat alleviated by NVE securing a grant for the purchase of a vessel and working with ADF&G and USFS to utilize their resources. Recurrent boat problems also put additional demands on logistics (and the budget) for things like additional town supply flights and on the ability to move the second fishwheel prior to high water. We eventually overcame these difficulties but not without spending significantly more on boat-related and boat-induced expenses than we budgeted.

Given the expense of operating a field camp, we are considering options other than a completely separate recovery project and camp at Wood Canyon in 2002. We are considering placing recovery fishwheels south of Tiekel River, which would allow them to be operated and staffed by a single camp near Baird Canyon, or by one large camp (Baird Canyon) and a smaller camp upstream that could be serviced by the same logistical support system. We will also continue to pursue methods of automating the sorting and releasing of sockeye in order to reduce the crew labor for handling fish and reduce densities of fish in the holding tanks. These and other options will be reviewed during the community consultation workshop in the fall, with OSM technical representatives (e.g., Doug McBride), and in the annual report due in December.

Finally, delays in the deployment necessitated that we keep Lawrence Stephens, a Nisga'a fisheries technician from Northern British Columbia, on the project for an additional 10 days to assist with operating the fishwheels and providing training to this project's less experienced field staff.

Schedule
No major scheduling problems were encountered. As mentioned earlier, the low river discharge in late May extended the mobilization period and delayed fishwheel deployment for a few days.

Staffing
Project personnel were generally excellent throughout the project. Some communication problems were encountered with Matt Nemeth, LGL's onsite field project manager. Matt was instrumental in meeting the objectives of this project and his efforts have been recognized. However, there were a few occasions when Matt's communication with NVE staff and the Principal Investigator was insufficient and this lack of communication jeopardized the capacity building nature of the project. NVE and LGL removed Matt from the project in a timely manner (August 2001) and LGL will replace Matt with a more appropriate field project manager. Michael Link is currently acting as the Principal Investigator and Project Manager.

Budget
Additional motors and boats were leased and purchased for the project and repair costs for project boats were greater than anticipated. In addition, the difficulty of moving the fishwheels at high flows will require that we outfit the fishwheels with transoms and motors (temporary ones were developed in 2001). Field support activities such as staff time in town as well as air charters for supply flights were all greater than budgeted. Given the importance of these activities in meeting project objectives, NVE temporarily advanced its own funds to cover these unexpected expenditures. NVE is seeking significant additional funding from multiple sources, including OSM, to properly outfit the project for next year.

Table 1. Preliminary chinook and sockeye salmon catch data from the Copper River fishwheels, 2001.

	Chinook				Sockeye			
Date	Fishwheel 1	Fishwheel 2	Total	Cumulative	Fishwheel 1	Fishwheel 2	Total	Cumulative
29-May	10		10	10	20		20	20
30-May	12		12	22	172		172	192
2-Jun	17		17	39	170		170	362
3-Jun	18		18	57	381		381	743
4-Jun	13		13	70	194		194	937
5-Jun	10	20	30	100	129	577	706	1643
6-Jun	6	28	34	134	96	256	352	1995
7-Jun	20	46	66	200	245	823	1068	3063
8-Jun		36	36	236		821	821	3884
9-Jun		34	34	270		693	693	4577
10-Jun		26	26	296		228	228	4805
11-Jun		54	54	350		709	709	5514
12-Jun		46	46	396		808	808	6322
13-Jun		51	51	447		827	827	7149
14-Jun		24	24	471		599	599	7748
15-Jun		36	36	507		753	753	8501
16-Jun		50	50	557		811	811	9312
17-Jun		63	63	620		588	588	9900
18-Jun		28	28	648		319	319	10219
19-Jun		13	13	661		207	207	10426
20-Jun		7	7	668		120	120	10546
21-Jun		7	7	675		110	110	10656
22-Jun		18	18	693		241	241	10897
23-Jun		11	11	704		248	248	11145
24-Jun		5	5	709		230	230	11375
25-Jun		11	11	720		480	480	11855
26-Jun		14	14	734		544	544	12399
27-Jun		27	27	761		766	766	13165
28-Jun		10	10	771		300	300	13465
29-Jun		15	15	786		616	616	14081
30-Jun		5	5	791		389	389	14470
1-Jul		24	24	815		953	953	15423
2-Jul		4	4	819		623	623	16046
3-Jul		11	11	830		674	674	16720
4-Jul		7	7	837		435	435	17155
5-Jul		0	0	837		340	340	17495
6-Jul		4	4	841		331	331	17826
7-Jul		2	2	843		381	381	18207
8-Jul		14	14	857		1059	1059	19266
9-Jul		25	25	882		2110	2110	21376
10-Jul		11	11	893		1015	1015	22391
11-Jul		3	3	896		495	495	22886

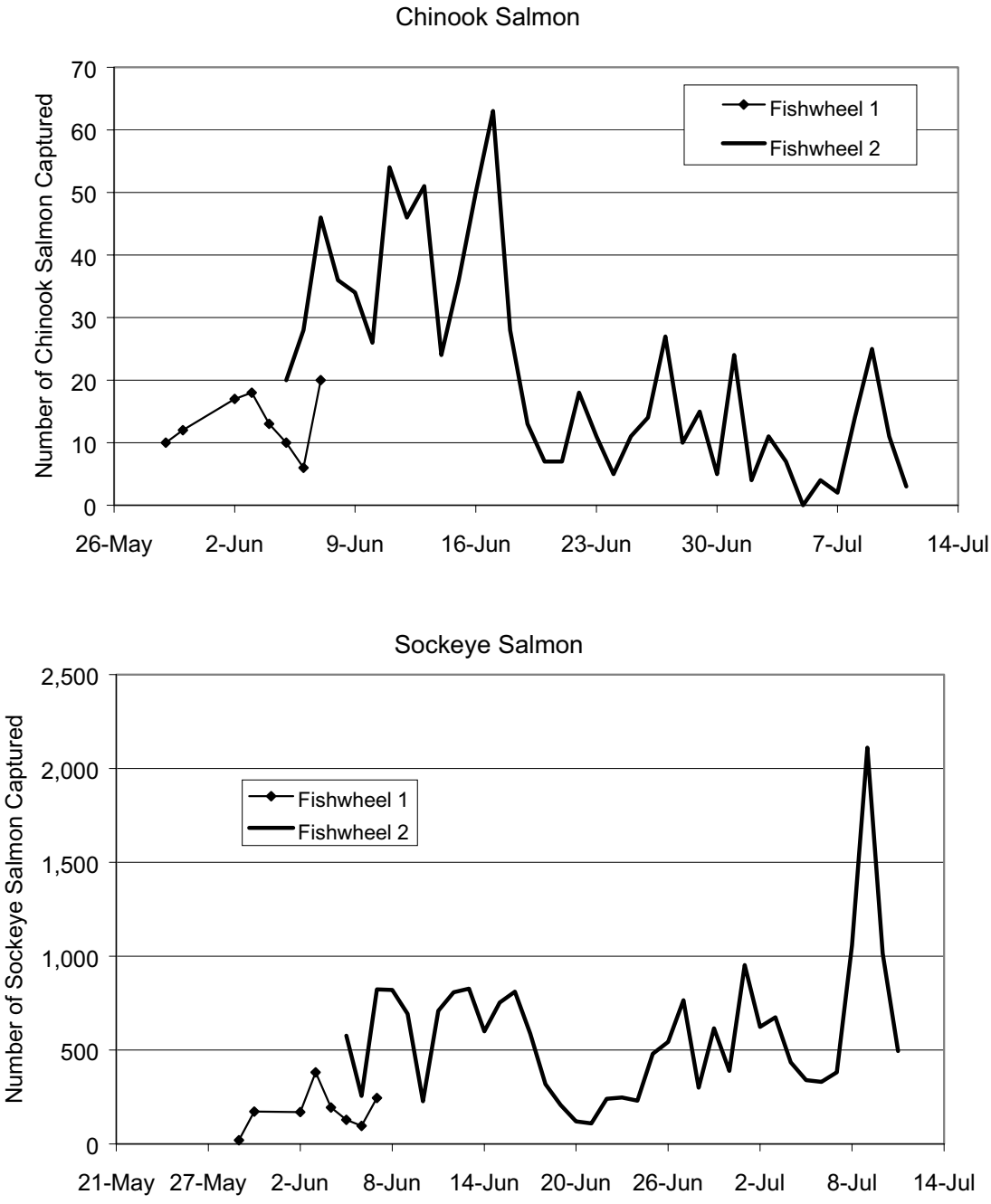


Figure 1. Daily catches of chinook and sockeye salmon by date and by fishwheel, Copper River, 2001.

01-021 Develop Methods to Estimate Inseason Salmon Abundance in the Lower Copper River

Investigators Information: Robert Henrichs, Native Village of Eyak (NVE), Phone: 907-424-7738, Michael Link, LGL Alaska Research Associates, Inc., Phone: 250-656-0127, Steve Moffitt, Alaska Dept. of Fish and Game, Comm. Fish. Division 907-424-3212, Don Degan, Aquacoustics, Inc., 907-260-6341

Objectives for Year 1 and Results to Date

Objectives

Determine migratory behavior and stream channel use by early-run sockeye and chinook salmon in the lower Copper River to gauge sampling effort needed to index inseason salmon abundance. Assess the efficacy of sonar to index the abundance of early-run salmon near Copper River Highway bridges (e.g., Mile 27 and 39 Bridges).

Field crews began work in late April 2001 and completed fieldwork in early June. Bathymetric maps were made of the two key bridge areas and split-beam and multi-beam acoustics were used to study fish behavior in these areas. ADF&G conducted test gillnetting through much of this period and we worked closely with them, sharing information and field equipment. Comparison of acoustic and test gillnetting data will be done in September and October. Exceptionally low flows of the Copper River were experienced through much of the study period. Specific project activities included:

Bathymetry

We collected data from the Mile 27 Bridge downstream 1 km and from the Mile 37 Bridge 0.75 km downstream. This work was done to find suitable sites for fixed-aspect acoustic monitoring. A differential GPS with sub-meter accuracy provided location data and a DT (digital) sonar system provided depths for each sample point. These data were integrated into a GIS to prepare maps for each site (an example of one map is provided on the last page of this report). The maps are complete, except for placement of sonar sample locations and fish counts by location.

Splitbeam Acoustic Data

Two splitbeam sonar systems were deployed at locations downstream of the Mile 27 and Mile 37 bridges during May 2001. The 200-kHz frequency hydroacoustic systems sampled with splitbeam transducers to monitor fish passage at several sites at both bridge locations. The primary sample area was on the right bank of the Copper River downstream of the Mile 27 bridge. A sonar system collected data over a 15-day period from May 13-27 at this site. We also collected data on the left bank and in mid-channel to assess fish distribution across the channel at Mile 27. Similar short-term data were collected from the Mile-37 location to assess fish distribution across the channel. Long-term data collected from the Mile-27 right bank site has been processed and fish of salmon size have been tracked. These data will next be summarized to provide information on patterns in fish passage at this site as related to date, time of day, and tidal changes. This information should also provide us with the information needed to compare with gillnet indices and Miles Lake sonar counts. Analysis of the short-term data has not yet been done. This information will be processed over the next month and provide cross-channel fish distributions during the sample period.

Multi-beam Acoustic Data
A multi-beam sonar system collected data from both Mile 27 and Mile 37 sites during May 2001. The multi-beam data will provide some information on fish presence or absence at the various sites within the channel. We viewed most of these data during collection to assess fish presence and used this information in-season to guide our sampling effort.

Consultations and Capacity Development

Consultations
Project staff worked closely with ADF&G research and management biologists from Cordova and Anchorage throughout the project. In addition, a presentation was made to interested public and Cordova District Fishermen United (CDFU) members and executive in early May on both this project and the chinook escapement monitoring project that NVE was doing. CDFU executive also were given informal tours at the field sites. OSM technical representative Doug McBride toured the field site and provided input to the design of the study and its possible future direction.

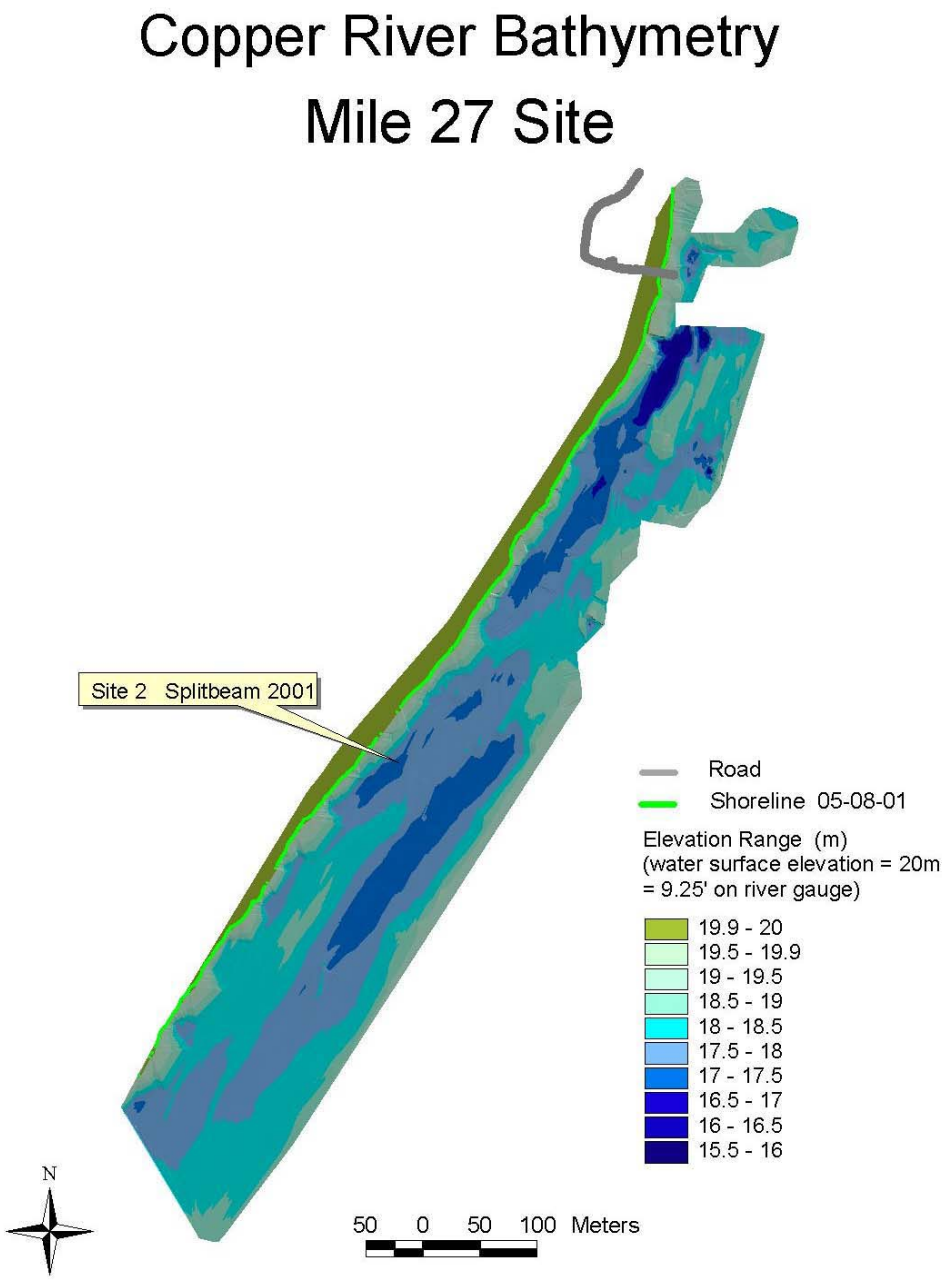
Capacity Development
NVE provided field technicians and logistical support throughout the study. Four technicians were given basic training in using computers and acoustic equipment. NVE worked with local agency staff (ADF&G) to coordinate and facilitate exchange of information throughout the field season.

Methods
We encountered some difficulties with boat support early in the season. We had originally planned to use an ADF&G boat for some of the mapping activities but delivery of this new boat was delayed until after the completion of fieldwork. We worked with ADF&G to outfit other boats of theirs and were able to complete the necessary tasks, albeit a little delayed. The multi-beam system was less "user" friendly than we expected. However, Dr. Tim Mulligan spent a week on site and was able to get the system functioning well. We also recruited an additional biologist to provide field support (see Staffing below).

Schedule
No scheduling problems were encountered.

Staffing
The Simrad multi-beam system was more challenging (i.e., less user friendly) to operate than originally envisioned. This required more professional support time than originally budgeted. Simrad was quick to recognize this and significantly reduced the lease cost of the equipment. In turn, we responded quickly in-season by recruiting an additional LGL biologist with acoustic training (Richard Bussanich) to the project using the funds saved from the Simrad lease. Richard was an enormous help in deploying all the gear and helping to meet the project objectives.

Budget
Aside from the changes to the multi-beam equipment lease cost and the additional biologist support (explained above), there were no significant changes or problems associated with the budget.


Copper River Bathymetry
Mile 27 Site
Site 2 Splitbeam 2001
Road
Shoreline 05-08-01
Elevation Range (m)
(water surface elevation = 20m
= 9.25' on river gauge)
19.9 - 20
19.5 - 19.9
19 - 19.5
18.5 - 19
18 - 18.5
17.5 - 18
17 - 17.5
16.5 - 17
16 - 16.5
15.5 - 16
N
50 0 50 100 Meters

00-040 Copper River Subsistence Salmon Fishery Evaluation 2000 And Traditional Fisheries Knowledge Project

Investigator(s) Information: William E. Simeone Ph.D. Alaska Department of Fish and Game, Division of Subsistence, 333 Raspberry Road, Anchorage, Alaska 99518, Phone: 907-267-2309, e-mail: bill_simeone@fishgame.state.ak.us. In collaboration with: Copper River Native Association, Drawer H, Copper Center Alaska 99573, contact person Gloria Stickwan, Phone: 907-822-524; Chitina Village Council, P.O. Box 31, Chitina Alaska 99566, contact person Wilbur Joe, Phone: 907-823-2215; Cheesh'na Village Council, contact person Joe Hicks, Phone: 907-822-3503; Dr. James Kari 1089 Bruhn Rd. Fairbanks, Alaska 99709, e-mail: ffjmk@uaf.edu.

Study Objectives and Results

1. Document Ahtna elders traditional knowledge of salmon

2. Provide an overview and update of current trends and characteristics of the Copper River subsistence fishery

To meet the first objective ADF&G Division of Subsistence hired Dr. James Kari, a linguist who has worked with the Ahtna language for 20 years. Dr. Kari and the principal investigator interviewed 12 Ahtna elders and collected information which included the following topics:

taxonomy of salmon and other fish,
knowledge of salmon life history,
factors influencing the movement of salmon
harvest devices and the preparation of salmon,
the Ahtna management system
legends and stories about salmon.

Eight chapters of a draft report on these topics have been completed and are being revised.

To meet the second objective the principal investigator designed a survey instrument that was used to survey 509 subsistence users (382 non-locals and 127 locals). Members of the cooperating Tribal groups participated in this portion of the research by interviewing their own Tribal members. The data has been cleaned, entered into the computer, and a preliminary analysis has been completed. The data was organized in terms of criteria used to make customary and traditional use determinations. Statistically significant differences were found between non-local and local subsistence users. Further analysis and writing are needed to finish this portion of the project. The target for completing a draft final report is November 1, 2001.

In addition the principal investigator developed a PowerPoint presentation about the project that was presented on August 10, 2001 to staff from USFWS office of subsistence management and NPS. On September 24, 2001 this same presentation will be shown to members of the Copper River Association and on October 2, 2001 the presentation will be shown to the South Central Regional Advisory Council.

Consultations and Capacity Development

As noted above, this has been a collaborative project between ADF&G and the three Ahtna Tribal groups listed above. Each of these groups has been involved from the beginning in the project. They have hired one or more persons to conduct interviews within their communities. In addition the Copper River Native Association hired a person to transcribe tapes. Elders from each of the Ahtna communities have been interviewed about their knowledge of salmon. Additional rounds of interviews are planned for the fall and winter of 2001-2002.

01-217 Workshop Series to Build Capacity for Collaborative Fisheries Co-management Among Copper River Native Groups

Investigator(s) Information: Gloria Stickwan, Copper River Native Association (CRNA), Copper Center, AK, Phone: 907-822-5241**,** Michael Link and Matt Nemeth, LGL Alaska Research Associates, Inc., Anchorage, AK, Phone: 907-562-3339.

Information for Items 1 and 2 must be provided for each study!

Study Objectives and Results

This project provides funding for a short series of meetings. As designed in the IP, the first of these meetings was scheduled for early April, 2001. The timing of these meetings is crucial in that many of the participants are actively engaged in fishing activities. Final funding approval for FY2001 projects was not until late February, 2001. Further, cooperative agreements from USFWS to secure funding were not available until late March - early April. This timeline precluded implementation of this project in 2001. Delay of this project until 2002 was approved by FIS staff, and a modification to the Cooperative Agreement will be executed.

Consultations and Capacity Development
See above

Schedule
See above

Budget
See above. The full budget is available to conduct this project in FY2002.

Progress Reports
for
Copper River Steelhead

01-148 **Stock Status and Population Biology of the Copper River Steelhead**
01-035 **Steelhead Harvest Monitoring in the Copper River Basin**

01-148 Stock Status And Population Biology Of The Copper River Steelhead

Investigator(s) Information: Douglas F. Fleming, Alaska Department of Fish and Game, Sport Fish Division, 1300 College Rd. Fairbanks, AK 99701-1599, Phone: 907-459-7252, e-mail: doug_fleming@fishgame.state.ak.us; Gloria Stickwan, Copper River Native Association, Drawer H, Copper Center, AK 99573, Phone: 907-786-3910; William Spearman, USFWS Fisheries Genetics Laboratory 1011 E. Tudor Rd., Anchorage, AK 99503, Phone: 907-786-3317, e-mail: Bill_Spearman@fws.gov

Study Objectives and Results

Objectives
Count adult steelhead migrating into the spawning areas in the Middle Fork Gulkana, and Hanagita rivers, that are currently believed to be the most significant spawning stocks in the upper Copper River drainage.

Results
Enumeration of steelhead in the Gulkana River was done using a mark-recapture methods. Bi-directional fish passage information was recorded with underwater video equipment. Data analysis is in progress. Field work for the Hanagita River portion of the project was initiated in late August.

Objectives
Evaluate the utility of mitochondrial (mt) DNA and nuclear (nuc) DNA microsatellite genetic markers for use in characterizing the population substructure of the Copper River steelhead populations.

Results
Tissue samples were collected from both steelhead and rainbow trout from the Gulkana portion of the project. Over 50 samples will be analyzed.

Consultations and Capacity Development

An overview of the project was presented to members of the regional village corporations at a public meeting at Taslina Hall on April 30.
CRNA will be providing a Fishery Technician to work with ADF&G staff at the Hanagita site.
Several discussions were held with staff of the BLM Glennallen field office concerning logistics for the project. BLM biologist Elijah Waters assisted with the project and provided logistic support in setting up the spring field site.
Staff from Wrangell-St. Elias NPS were consulted on the location of the fall field sampling location.
Discussions on the genetic work took place with staff of the USFWS, Fisheries Genetics Laboratory prior to initiating the field work.

Methods

Steelhead stayed downstream of the Gulkana River weir for enumeration. Subsequently, a mark-recapture steelhead was initiated to estimate the number of steelhead migrating into the spawning grounds. Steelhead were collected with rod & reel for the marking event. A seine was used for the recapture event.

01-035 Steelhead Harvest Monitoring in the Copper River Basin

Investigator(s) Information: Eric R. Veach, National Park Service, Mile 105.5 Old Richardson Hwy., Copper Center, Alaska 99573; Gloria Stickwan, Copper River Native Association, PO Box H, Copper Center, AK 99573

Summary

In cooperation with the Copper River Native Association (CRNA), we performed a fishwheel harvest monitoring project during the portion of the season during which only the Federal subsistence fishing season was open in the Glennallen Subdistrict of the Upper Copper River District. Ice conditions prevented fishwheel operation immediately following the opening of the season. Two fishwheels were operated once the ice conditions improved. One wheel was installed May 20 and the other wheel was installed May 23. Both wheels were operated through May 31.

Another component of the project was to conduct aerial surveys of the Copper River from the mouth of the Slana River to the bridge at Chitina to document the number of fishwheels in the water either actively fishing or ready to fish. Three flights were conducted from a fixed wing aircraft during the monitoring period. The first two surveys encompassed the stretch of the Copper River beginning at the bridge in Chitina all the way to the mouth of Tanada Creek. The third survey only covered the stretch of the Copper River from Gulkana Airport to the bridge in Chitina. The first flight conducted Thursday May 17th, two days after the fishery opened, documented one fishwheel spinning (in the copper center area) and eight in the river ready to fish. The second flight conducted Friday May 25th, ten days after the fishery opened, documented four fishwheels spinning (three in Copper Center and one at Gulkana Village) and thirteen in the river. The final flight conducted on May 31, the day prior to the beginning of the State subsistence fishing season, three fishwheels were observed spinning, and twenty-five were in the river ready to fish.

The data has not been analyzed yet but we anticipate completing a final report by 9/30.

Budget

Wrangell-St.Elias utilized all of the $3000 received for FY 01 for OAS costs.

CRNA spent the following:

Salaries	$2000
Supplies	$ 856
Indirect	$807
Total	$3663

CRNA would like to use the unutilized FY01 funds to expand the number of fishwheels operated in FY02 from 2 to 4.

Progress Reports
for
Prince William Sound

00-035 Extend Coghill Lake Adult Escapement Weir Operations

00-035 Extend Coghill Lake Adult Escapement Weir Operations

Investigator(s) Information: Primary: J. Johnson, Alaska Dept. of Fish and Game, jay_johnson@fishgame.state.ak.us, Phone: 907-424-3212; Rob Spangler, US Forest Service, rspangler@fs.fed.us, 907-754-2325.

Study Objectives and Results

Continue to operate adult weir from August through September to determine spawning escapement.
From July 10 through August 23, a total of 237 coho salmon were counted. The first coho salmon was observed at the weir on July 10. On July 21 and 22, the area experienced heavy rainfall that caused the river's water level to rise sufficiently and put the weir in danger of washing out. The weir crew was forced to pull many pickets to relieve the water pressure against the weir. As a result, no fish counts were made from July 22 through July 24. By July 25, the water level had dropped sufficiently to allow safe operation of the weir and normal fish counting operations resumed. No more coho salmon were counted until July 27 (Table 1). On August 19, the area experienced another episode of heavy rainfall and the weir crew had to pull pickets to alleviate water pressure on the weir. As a result, no counts were made from August 20 through August 22. The crew was able to replace weir pickets on August 23, counting resumed thereafter.

Coho salmon passage through the weir has been highly variable (Figure 1), ranging from a high of 51 coho salmon on August 19 to no fish from July 11 through July 26 and July 28 through July 31. An average of 12 coho salmon a day passed through the weir from August 1 through August 23.

Determine the age, sex, and length composition of coho salmon at the weir site.
The weir crew began collecting scales, length and sex information on August 23. Since fish passage rates during the 2001 field season are highly variable the crew will once again establish three sampling periods to ensure an adequate sample. Age, length, and sex information will be available after the end of the field season.

Daily in season reporting of escapement data to State and Federal management staff for use in the management of subsistence, commercial and sport fisheries.
Escapement returns were sent to the USFS via e-mail once a week.

Consultations and Capacity Development

This project serves as a partnership between the USFS and ADF&G through a contract with ADF&G, Commercial Fisheries Division. -The 2000 results were shared with residents of Chenega and Tatitlek last fall. At meetings this Spring they encouraged the work to continue as they are concerned about small stocks of salmon in Prince William Sound. Meetings are planned with the communities of Chenega and Tatitlek this fall to discuss the results from the 2001 field season. One local resident from Cordova was hired as a field technician (John Norris, POB 651, Cordova, no phone).

Methods

Last year ADF&G found that nearly half of the scales collected were unreadable due to regeneration, dirty scales, or missing scales. The weir crew received additional training at the beginning of the 2001 season to ensure readable scales are taken. The crew was also instructed to take three scales instead of two to ensure at least one readable scale was collected.

Schedule

The reporting time to the USFS was altered to once a week, as daily reporting was deemed unnecessary.

Progress Reports
for
Cook Inlet

00-038 Cooper Creek Salmonid Investigations
01-041 Eulachon Subsistence Use And Ecology Investigations

00-038 Cooper Creek Salmonid Investigations

Investigator(s) Information: Bruce King, Alaska Dept. Fish and Game, Sport Fish Division 43961 Kalifornsky Beach Road, Soldotna, AK 99669, 907-262-9368, Bruce_King@fishgame.state.ak.us

Study Objectives and Results

Objective

The objective of the project was to census the abundance of salmonids entering Cooper Creek to spawn or rear.

Results

A fish weir was installed near the confluence of Cooper Creek and the Kenai River beginning 19 July. The fish weir was staffed 24-hours a day and the numbers of all salmon species tallied. A total of 32 Dolly Varden were passed through the weir from 19 July through 13 August (Table 1). The fork length of all Dolly Varden was measured. Morphological and physical characteristics indicative of sex and spawning condition were also recorded. All Dolly Varden >200 mm in fork length are marked with a Floyä T-Anchor tag and an adipose fin-clip. The average length of Dolly Varden to date is 447 mm.

Consultations and Capacity Development

This project is a cooperative endeavor with the United States Forest Service. Data are also provided to the USFWS and USGS as part of an on-going data collection effort. Three locally (Soldotna area) hired residents installed and operated the weir. Agency Contacts: Dave Blanchet, Hydrologist, Chugach National Forest, USFS; Bill Shuster, USFS; Vicki Davis, USFWS

Schedule

The weir was scheduled to begin operation in May. High water that inundated the creek and surrounding riparian zone prevented installation and operation until 19 July when conditions were considered safe.

Table 1.-Individual Dolly Varden captured and tagged at Cooper Creek, 2001.

Date	Length (mm)	Sex	Tag Number
19-Jul	528	U	329127
20-Jul	377	U	329128
24-Jul	487	U	329130
26-Jul[a]	312	U	R330977
26-Jul	130	U	NO TAG
27-Jul	238	U	329131
28-Jul	495	U	329133
2-Aug	449	U	329134
4-Aug	513	U	329135
5-Aug	496	U	329136
5-Aug	254	U	329137
8-Aug	473	M	329138
8-Aug	381	U	329139
9-Aug	435	F	329140
9-Aug	469	F	329141
9-Aug	556	F	329142
9-Aug	484	U	329143
10-Aug	517	M	329145
11-Aug	550	M	329146
11-Aug	421	F	329147
11-Aug[a]	545	M	R327777
11-Aug	505	F	329149
12-Aug	523	U	329150
12-Aug[a]	464	U	R327072
12-Aug	455	U	329151
12-Aug	443	M	329152
12-Aug	460	F	329153
12-Aug	431	U	329154
13-Aug	427	F	329155
13-Aug[a]	498	F	R327303
13-Aug	468	U	329156
13-Aug	543	U	329157

[a] *Recaptures from a previous marking event.*

01-041 Eulachon Subsistence Use And Ecology Investigations

Investigator(s) Information: Primary: Rob Spangler, U.S. Forest Service, Fishery Biologist, P.O. Box 129, Girdwood, AK 99587. e-mail: rspangler@fs.fed.us; Secondary: Brenda Norcross, Associate Professor of Fisheries Oceanography, University of Alaska Fairbanks, P.O. Box. 757220, Fairbanks, AK 99775-7220. e-mail: norcross@ims.uaf.edu.

Study Objectives and Results

Determine use of the eulachon fishery (user demographics, harvest; 2002)
Harvest monitoring will be conducted starting in 2002 and methods are currently being developed to insure consistency with project FIS 00-017, Recommendations for unified subsistence fisheries harvest assessment program.

Determine run timing and other aspects of eulachon biology (fecundity, age, etc.) in Twentymile River. (2000, 2001, 2002)
Run timing and sampling to determine fecundity, age, length, and weight (n=1,122) was completed from 17 April through 29 June for the 2001 season. Run strength was highly variable with the peak occurring on 20 May (Figure 1). We are currently processing samples and analyzing data.

Characterize and map upper limits of spawning and critical spawning habitat (2000, 2001)
Radio telemetry was used successfully to track migrating adult eulachon. One hundred and eight (males, n=54; females, n=54) transmitters were placed in eulachon distributed throughout the spawning run. Results of radio telemetry and larval sampling indicated that the upper limits of spawning exceeded 9 km upstream from the mouth of Twentymile River. Furthermore, aggregations of fish over time indicated likely spawning areas. Substrate sampling for eggs was conducted to confirm spawning areas where aggregations of eulachon were present. Two methods (modified suction and Eckman dredges) and were employed with limited success. All results are preliminary and data are currently being analyzed.

Conduct biomass surveys as an index of relative run strength. (2000, 2001, 2002)
Biomass sampling commenced on 8 May and will continue until no larvae are caught for two consecutive days. As of 28 August, 924 samples had been collected of which 414 had been analyzed. The stream gauging station is operating satisfactorily.

Determine presence/absence of eulachon in the Portage Creek and Placer River drainages. (2000, 2001, 2002)
We only detected eulachon in Portage Creek this year. The low number of fish caught in both systems over the past two years may indicate straying from Twentymile River as there were very few fish caught (<10) and these tributaries are very close in proximity (< 1km).

Collect samples for larger eulachon study to determine stock composition and interception in the Pacific. (2000)
One hundred samples (50 males, 50 females) were frozen and delivered to the Department of Fisheries and Oceans in British Columbia, Canada for this study.

Consultations and Capacity Development

Consultations have been conducted with Barry Stratton and Matt Miller (ADF&G Sport Fish). The proposal was reviewed at the ADF&G area meetings and they are in full support of the project. Additional partners include: the University of Alaska Fairbanks (UAF), and the Department of Fisheries and Oceans (DFO) in British Columbia, Canada. James Showalter and other elders of the Kenaitze IRA are concerned about the apparent decline in the Twentymile River eulachon fishery and encourage this work. Jim Fall (ADF&G, Subsistence) has been contacted and the project was presented at the Southcentral Regional Advisory Council meeting. We have been coordinating with eulachon work on the Copper River Delta (Steve Moffitt, ADF&G Commercial Fisheries). Meetings are planned this winter with ADF&G, and the Chenega, Tatitlek, and Kenaitze IRA's to present progress on projects and to discuss current subsistence issues.

There were no responses to ANILCA job announcements sent to Whittier, Chenega, Tatitlek, or Eyak Villages. According to residents of Chenega, Tatitlek and Eyak, there was interest, but not enough people to fill them. However, we hired one local resident that had fished this population with her family for the past fifteen years (Theresa Hunt, 783-4818).

Rural groups and State and Federal Agencies are interested in the results of this project as the new techniques developed can be applied to other eulachon populations elsewhere in Alaska. Upon verification of sampling procedures, implementation will be relatively straightforward allowing local subsistence user groups to become more actively involved in monitoring eulachon population trends in the future.

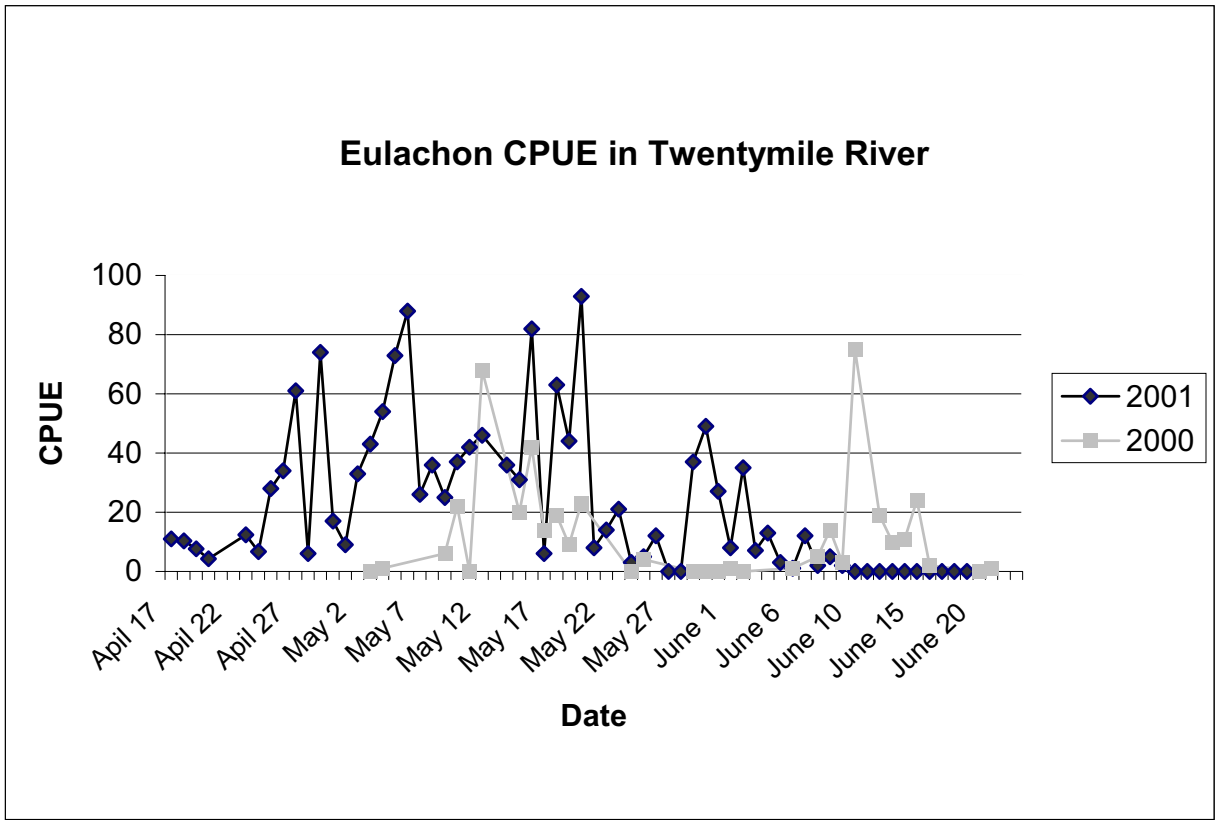


Figure 1. Catch per unit effort (CPUE) of Eulachon in Twentymile River